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## NOV 1 3 2007 TECH CENTER 1600/2900

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/142,108B

DATE: 09/19/2001 TIME: 10:35:15

Input Set : A:\11658.bk!

Output Set: N:\CRF3\09192001\I142108B.raw

```
4 <110> APPLICANT: Brugliera, Filippa
             Holton, Timothy A.
             Michael, Michael Z.
      8 <120> TITLE OF INVENTION: GENETIC SEQUENCES ENCODING FLAVONOID PATHWAY ENZYMES
             AND USES THEREFOR
     11 <130> FILE REFERENCE: 11658
    13 <140> CURRENT APPLICATION NUMBER: 09/142,108B
C--> 14 <141> CURRENT FILING DATE: 2001-08-30
    16 <150> PRIOR APPLICATION NUMBER: PN8386
                                                                    ENTERED
    17 <151> PRIOR FILING DATE: 1996-03-01
    19 <160> NUMBER OF SEQ ID NOS: 45
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    29 <221> NAME/KEY: CDS
    30 <222> LOCATION: (50)..(1588)
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    34
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    37 tta agc cta att ctg tac acc gtc att ttc tca ttt ctt cta caa ttc
     38 Leu Ser Leu Ile Leu Tyr Thr Val Ile Phe Ser Phe Leu Leu Gln Phe
                                 10
                                                     15
     41 att ctt aga tca ttt ttc cgt aaa cgt tac cct tta cca tta cca cca
     42 Ile Leu Arg Ser Phe Phe Arg Lys Arg Tyr Pro Leu Pro Leu Pro Pro
                             25
                                                 30
     45 ggt cca aaa cca tgg cca att ata gga aac cta gtc cat ctt gga ccc
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     46 Gly Pro Lys Pro Trp Pro Ile Ile Gly Asn Leu Val His Leu Gly Pro
                         40
                                             45
     49 aaa cca cat caa tca act gca gcc atg gct caa act tat gga cca ctc
     50 Lys Pro His Gln Ser Thr Ala Ala Met Ala Gln Thr Tyr Gly Pro Leu
                                         60
     53 atg tat ctt aag atg ggg ttc gta gac gtg gtg gtt gca gcc tcg gca
     54 Met Tyr Leu Lys Met Gly Phe Val Asp Val Val Ala Ala Ser Ala
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    57 tcg gtt gca gct cag ttc ttg aaa act cat gat gct aat ttc tcg agc
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     58 Ser Val Ala Ala Gln Phe Leu Lys Thr His Asp Ala Asn Phe Ser Ser
                                 90
    _6<u>1_cgt_cca_cca_aat_tct</u>.ggt_gca_gaa-ca<del>t</del>-atg-gct-tat-aat-tat-cag-gat-=394
     62 Arg Pro Pro Asn Ser Gly Ala Glu His Met Ala Tyr Asn Tyr Gln Asp
    63 100
                            105
    65 ctt gtt ttt gca cct tat gga cct aga tgg cgt atg ctt agg aaa att
     66 Leu Val Phe Ala Pro Tyr Gly Pro Arg Trp Arg Met Leu Arg Lys Ile
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120

67



RAW SEQUENCE LISTING

· **D** ·

DATE: 09/19/2001 TIME: 10:35:15

PATENT APPLICATION: US/09/142,108B

Input Set : A:\11658.bk!

69 tgc tca gtt 70 Cys Ser Val 71								490
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74 Val Arg Gln							_	
75 150	-	_	155	_	160			
77 ggc caa aag	cca gtc	aaa tta	ggt cag	tta ttg	aac gtg	tgc acg	acg	586
78 Gly Gln Lys	Pro Val	_	Gly Gln	Leu Leu		Cys Thr	Thr	
79 165		170			175			
81 aac gca ctc					-			634
82 Asn Ala Leu	_		ren GIA	Lys Arg	val Pne	Ala Asp	195	
83 180 85 agt ggc gat		185	aca aca		aag tga	ata ata		682
86 Ser Gly Asp								002
87	200	iio din	nia nia	205	Lyb cer	210	vul	
89 gaa atg atg		acc aat	gtt ttt		ggt gat		ccq	730
90 Glu Met Met								
91	215		220			225		
93 caa ctt aat	tgg tta	gat att	caa ggt	gta gcc	gct aaa	atg aag	aag	778
94 Gln Leu Asn	Trp Leu	Asp Ile	Gln Gly	Val Ala	Ala Lys	Met Lys	Lys	
95 230			235		240			
97 ctc cac gcg								826
98 Leu His Ala	Arg Phe		Phe Leu	Thr Asp		GIU GIU	HIS	
99 245 101 aag ggt aaa	++ +++	250	ata aa	a dat tt	255 a tta aat	- act tto	, atc	874
101 day ggt day								0/4
103 260	, iie ine	265	1100 27	27			275	
105 tct ctt aaa	a aat gat	gat gcg	gat aa	t gat gg	a ggg aaa	a ctc act	gat	922
106 Ser Leu Lys								
107	280			285		290		
109 aca gaa att								970
110 Thr Glu Ile	_	Leu Leu			e Val Ala		Asp	
111	295		30			305		1010
113 aca tot tot								1018
114 Thr Ser Ser 115 310		vai Giu	315	a ile Ai	a Giu Lei 320		ASII	
117 cca aaa ata		caa gcc		a gag at			т от от а	1066
118 Pro Lys Ile	_	_	-					2000
119 325		330			335			
121 agg gac cgg	g cta gtt	ggc gaa	ttg ga	c ctà gc	c caa tto	g aca tao	c ttg	1114
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124 340		345		35			355	
126 gaa gct ata		-	-	-				1162
127 Glu Ala Ile	_	Glu Thr	Phe Ar		s Pro Sei			
128	360			365		. 370		1010
130 tca ctt cct								1210_
131 <u>ser heu_Fro</u>	375	-4-10961-	-G1-u-Se.		u iic Abi	385	LIIC	
134 att cca aaa		agg gtt			t taa acc		cat	1258
134 all CCa dad	a yyu Lua	acy CLL		c auc ac				

RAW SEQUENCE LISTING DATE: 09/19/2001 PATENT APPLICATION: US/09/142,108B TIME: 10:35:15

Input Set : A:\11658.bk!

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	-			-		-	_		_					_	Arg		
140	YPP	405	ASII	AIG	111	AIG	410	110	пса	GIU	Liic	415	110	Ora	n y	1 110	
	++~		~~~	~~+	~~~	224		222	~++	<b>~</b> ~ +	~+ ~		~~~	+	<b>~</b> ~ ~	+++	1354
	_					_			_	-	_	_			gac		1334
		Pro	GIA	GLY	Glu	_	Pro	гĀċ	val	Asp		Arg	GIY	Asn	Asp		
144						425					430					435	
															atg		1402
	Glu	Val	Ile	Pro		Gly	Ala	Gly	Arg	_	Ile	Cys	Ala	Gly	Met	Asn .	
148					440					445					450		
															cat		1450
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152				455					460					465			
154	ttt	aac	tgg	gat	ttg	gtc	agt	gga	caa	ttg	ccg	gag	atg	ttg	aat	atġ	1498
155	Phe	Asn	Trp	Asp	Leu	Val	Ser	Gly	Gln	Leu	Pro	Glu	Met	Leu	Asn	Met	
156			470					475					480				
158	gaa	qaa	qca	tat	qqq	ctq	acc	tta	caa	cqq	gct	gat	cca	ttg	gtt	gtg	1546
															Val		
160		485		-	-		490			_		495					
	cac		ασσ	cat	cac	t.t.a		acc	caa	aca	tac		ggg	tσa			1588
				Pro	_		_	-						0			
	500		9		5	505					510		1				
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	-		_						_		-		-			attgtc	
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	<212				LZ												
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182	_ 1				- 5	_	_	_,	_,	10	_	_	_	_	15		
	Leu	GIn	Phe		Leu	Arg	Ser	Phe		Arg	гĀг	Arg	Tyr		Leu	Pro	
185	_	_	_	20			_	_	25				_	30		'	
	Leu	Pro		Gly	Pro	Lys	Pro	_	Pro	Ile	Ile	Gly		Leu	Val	His	
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190 191	Gly 65	Pro	Leu	Met	Tyr	Leu 70	Lys	Met	Gly	Phe	Val 75	Asp	Val	Val	Val	Ala 80	
19 <b>1</b>	65				_	70					75				Val Ala	80	
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 191 192 193 194 195 196 197	65 Ala Phe Tyr	Ser Ser Gln	Ala Ser Asp 115	Ser Arg 100 Leu	Val 85 Pro _Val	70 Ala Pro Phe-	Ala Asn Ala	Gln Ser Pro	Phe Gly 105 Tyr	Leu 90 Ala Gly	75 Lys Glu Pro	Thr His Arg	His Met Trp 125	Asp Ala 110 Arg	Ala 95 Tyr	80 Asn Asn Leu	

RAW SEQUENCE LISTING DATE: 09/19/2001 PATENT APPLICATION: US/09/142,108B TIME: 10:35:15

Input Set : A:\11658.bk!

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	202	Ala	Ser	Ala	Gly	Gln	Lys	Pro	Val	Lys	Leu	Gly	Gln	Leu	Leu	Asn	Val
	203				-	165	-			-	170	_				175	
		Cys	Thr	Thr	Asn	Ala	Leu	Ala	Arq	Val	Met	Leu	Gly	Lys	Arq	Val	Phe
	205	-			180			•	,	185			_	-	190		
		Ala	Asp	Glv		Gly	Asp	Val	Asp		Gln	Ala	Ala	Glu	Phe	Lvs	Ser
	207			195	501	011			200					205		-1 -	
		Met	Val		Glu	Met	Met	Val		Ala	Glv	Val	Phe		Ile	Glv	Asp
	209		210		014			215			1		220				- T
		Phe		Pro	Glń	Leu	Asn		Leu	Asp	Ile	Gln		Val	Ala	Ala	Lvs
	211				· · · ·		230					235	1				240
			Lvs	Lvs	Leu	His		Ara	Phe	Asp	λla		Leu	Thr	Asp	Ile	
	213	1100	2,0	110	200	245				or	250					255	
		Glu	Glu	Hic	T.vc	Gly	T.vs	Tle	Phe	G1 v		Met	Lvs	Asn	Len		Ser
	215	GIU	Olu	1113	260	OLY	<b>L</b> y 5	110	1110	265	OLu	1100	270	1105	270	Lou	501
		Пhr	T.e.u	Tle		Leu	T.vc	Δen	Asn		Δla	Asp	Δsn	Asn		Glv	Lvs
	217		neu	275	DCI	ысц	Lys	ASII	280	пор	mu	пор	71011	285	011	011	270
			mh r		Пhr	Glu	Tla	Luc		T.A11	T.011	T.611	λen		Dhe	٧al	Δla
	219	пеп	290	АБР	T 11T	Giu	110	295	нта	пеа	пеп	цец	300	шси	1110	Val	AIG
		C137		7 cn	Пhr	Ser	Sar		Thr	Wal	Glu	Фил		Tle	λla	Glu	T.e.11
	221	_	TIIT	ASP	TIIT	261	310	261	1111	Val	GIU	315	Ala	TIC	AIG	GIU	320
			7 m er	7 ~ ~	Dmo	Lys		Tou	λl -	Cln	<b>7.1</b> ~		Cln	C1	T10	λan	
		TTE	Arg	ASII	PIO	325	116	ьeu	Ата	GTII	330	GIII	GIII	GIU	116	335	цур
	223	170 l	370.1	C1	7 ~ ~	Asp	λ m σ	T 011	37-1	C1.,		T 011	N a n	T 011	λ1 ο		LOU
		Val	Val	GLY	340	ASP	AIG	ьeu	Val	345	GIU	цец	ASP	Leu	350	GIII	пеп
	225	ml	m	T		3 l a	T1.	17 - 1	T		Шhт	Dho	7 ~~	T 011		Dro	Cor
		THI	туг		GLU	Ala	me	val	360	GIU	THI	Pne	AIG	365	птъ	PIO	261
	227	m1	D	355	C	T	D	3		3 l a	C	c1	C ~ ~		C1	т1.	7 an
		Thr		Leu	ser	Leu	PIO	_	ше	АГА	ser	GIU		Cys	GIU	116	ASII
	229	<b>a</b> 1	370	DI	T1 -	D	T	375	C	mla aa	T	T	380	2 ~ ~	370 I	Штт	710
		_	Tyr	Pne	ire	Pro	_	GTĀ	ser	THE	Leu		ьеu	ASII	Val	тъ	400
	231						390		m		3	395	<b>T</b>	<b>a</b> 1	Dl	3	
		ire	Ата	Arg	Asp	Pro	ASN	Ата	Trp	Ala	_	Pro	ьeu	GIU	Pne		PIO
	233	<b>01</b>	•	D1	<b>.</b>	405	<b>a</b> 1	<b>01</b>	<b>01</b>	<b>T</b>	410	<b>T</b>	**- 1	1	37- T	415	C1
		GIU	Arg	Pne		Pro	GTA	GIY	GIU		Pro	гĀг	vaı	Asp		Arg	GIÀ
	235	3	•	D1	420	**- 1	<b>T</b> 1 -	<b>D</b>	D1	425	<b>31</b> -	G1	3	3	430	<b></b>	31.
		Asn	Asp			Val									me	Cys	Ala
	237	<b>a</b> 1				<b>a</b> 1				**- 1				445	31-	m\	T
				Asn	Leu	Gly	ITE		мет	vaı	GIN	Leu		me	Ата	THE	ьeu
	239		450	<b>.</b> 1 -	D1		<b></b>	455	T	**- 1	G	G1	460	T	D	<b>~1</b>	M-+
			HIS	ата	rne	Asn		Asp	ьeu	val	ser		GIN	ьeu	Pro	GIU	мет 480
	241		_		~ 1	~ 1	470	_	<b>~</b> 3		m)	475	<b>a</b> 1	•	. 1 -		
		ьeu	Asn	мет	GLU	Glu	Ala	туг	стх	ьeu		ьeu	GIN	arg	ата		PIO
	243	<b>T</b>		**. *		485		ъ.		· •	490	<b>3.1</b> -	<b>01</b>	27-	m	495	C1
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<sup>250 &</sup>lt;210> SEQ ID NO: 3

<sup>251 &</sup>lt;211> LENGTH: 1737



RAW SEQUENCE LISTING DATE: 09/19/2001 PATENT APPLICATION: US/09/142,108B TIME: 10:35:15

Input Set : A:\11658.bk!

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265																177	
266																	
267	7																
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271			5					10					15				
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278		Gly	Gln	Ala	Pro	His	Gln	Gly	Leu	Ala		Leu	Ala	Gln	Lys		
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282	Gly	Pro	Leu	Leu	Tyr	Met	Arg	Leu	Gly	${\tt Tyr}$	Val	Asp	Val	Val	Val	Ala	
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287				70					75					80			4.6.5
										gct							465
	Phe	Ser		Arg	Pro	Pro	Asn		GLY	Ala	Lys	Hls		Ala	туг	Asn	
291			85					90					95				F12
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	Tyr		Asp	ьeu	vaı	Pne		Pro	Tyr	Gly	Pro	_	тгр	Arg	мес	Leu	
295		100	_++	++	+	++-	105	-+	+++	+ ~+	+ a+	110	a a t	++~	~~~	~~+	561
				_				_		tct		_	_	_	_	_	201
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	+ ~ ~	3.77	202		~~~	++>	+ ~~	344		atg	ct a	aaa	224		att	ctc	705
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312	Cys	TIIT	165	MO11	ита	цец	SEI	170	val	Met	TIE U	GIY	175	пта	val	ыeu	
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							-	_		Lys							, ,,
317												-1-9·0-					
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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/142,108B

DATE: 09/19/2001
TIME: 10:35:16

Input Set : A:\11658.bk!

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  L:965 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:9
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  L:2778 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:31
  L:2783 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:31
  L:2788 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:31
  L:2793 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:31
  L:2798 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31
  L:2824 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:33
  L:2829 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:33
  L:2834 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:33
  L:2839 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
  L:2851 \ M:257 \ W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2856 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2861 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2866 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2872 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2877 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2882 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2887 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:34
  L:2892 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
  L:2909 M:341 W: (46) "n" or "Xaa" used, for SEQ-ID#:35---
---L:2921 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/142,108B

DATE: 09/19/2001

TIME: 10:35:16

Input Set : A:\11658.bk!

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L:2926 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2931 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2936 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2941 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2946 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2951 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:36
  L:2956 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36
  L:3000 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
  L:3005 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
  L:3010 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
 L:3015 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40 L:3020 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
  L:3025 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
  L:3030 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:40
  L:3035 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40
  L:3248 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44
 L:3282 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3285 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3288 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3291 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3294 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3297 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3300 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:3303 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L\!:\!3306~M\!:\!341~W\!: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3309 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3312 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3315 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3318 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
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L:3324 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3327 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3330 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3333 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3336 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3339 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
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  L:3351 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3354 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L\!:\!3357~M\!:\!341~W\!: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3360 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
 L:3363 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
L:3366 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3369 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
 L:3372 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45----
- L:3375 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
  L:3378 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45
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